IN THE TITLE:

Please cancel the title and substitute the following:

PARAMETER FOR RECEIVING AND BUFFERING PICTURES

IN THE SPECIFICATION:

Please amend the specification, beginning at page 3, line 31 as follows:

In conventional video coding standards, the decoding order of pictures is the same as the display order except for B pictures. A block in a conventional B picture can be bi-directionally temporally predicted from two reference pictures, where one reference picture is temporally preceding and the other reference picture is temporally succeeding in display order. Only the latest reference picture in decoding order can succeed the B picture in display order (exception: interlaced coding in H.263 where both field pictures of a temporally subsequent reference frame can precede a B picture in decoding order). A conventional B picture cannot be used as a reference picture for temporal prediction, and therefore a conventional B picture can be disposed of without affecting the decoding of any other pictures.

Please amend the specification, beginning at page 13, line 27 as follows:

In the present invention a parameter signalling the maximum amount of required buffering is defined more accurately than in prior art systems. In the following description the invention is described by using encoder-decoder based system, but it is obvious that the invention can also be implemented in systems in which the video signals are stored. The stored video signals can either be uncoded signals stored before encoding, as encoded signals stored after encoding, or as decoded signals stored after the encoding and decoding process. For example, an encoder produces bitstreams in transmission order. A file system receives audio and/or video bitstreams which are encapsulated *e.g.* in decoding order and stored as a file. The file can be stored into a database from which a streaming server can read the NAL units and encapsulate them into RTP packets.

Please amend the specification, beginning at page 15, line 1 as follows:

--According to a first aspect of the present invention there is provided a method comprising receiving media data~~for~~ and buffering said ~~multi~~media ~~information~~data in a buffer, the media data being included in data transmission units, the data transmission units having been ordered in a transmission order which is at least partly different from a decoding order of the

media data in the data transmission units, wherein a parameter is defined indicative of the maximum ~~amount~~ number of data transmission units ~~comprising multimedia data~~ that precede any transmission unit ~~comprising multimedia data~~ in a packet stream in ~~transmission unit~~ transmission order and follow the transmission unit ~~comprising multimedia data~~ in the decoding order.

According to a second aspect of the present invention there is provided a method comprising receiving an encoded picture stream ~~for~~ and decoding said encoded picture stream in a decoder, ~~in which~~wherein the encoded picture stream is received as data transmission units comprising ~~multi~~media data, the data transmission units having been ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units, wherein buffering of said~~of encoded pictures~~ data transmission units is performed, wherein ~~the~~ buffering requirements are indicated ~~to~~ for said ~~the~~ decoding ~~process~~ as a parameter indicative of ~~the~~ a maximum ~~amount~~ number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising multimedia data~~ in the encoded picture ~~packet~~ stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.

According to a third aspect of the present invention there is provided a system comprising an encoder for encoding pictures and a buffer for buffering media data, the media data being included in data transmission units, the data transmission units having been ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units~~encoded pictures~~, wherein a parameter is arranged to be defined indicative of ~~the~~ a maximum ~~amount~~number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising multimedia data~~ in the packet stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.

According to a fourth aspect of the present invention there is provided a transmitting device for transmitting media data ~~being included~~ in data transmission units, the data transmission units ~~having been~~ ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units, wherein a parameter is arranged to be defined indicative of ~~the~~ a maximum ~~amount~~number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising~~

~~multimedia data~~ in ~~the~~ a packet stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.

According to a fifth aspect of the present invention there is provided a receiving device for receiving an encoded picture stream as data transmission units comprising ~~multi~~media data, the data transmission units ~~having been~~ ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units, wherein a parameter is arranged to be used indicative of ~~the~~ a maximum ~~amount~~number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising multimedia data~~ in the ~~packet~~ picture stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.

According to a sixth aspect of the present invention there is provided a computer program product comprising a computer readable medium having program code stored thereon comprising machine executable steps for buffering media data of encoded pictures in a buffer, the media data being included in data transmission units, the data transmission units ~~having been~~ ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units, wherein the ~~computer~~ program ~~product~~ code further comprises machine executable steps for defining a parameter indicative of ~~the~~ a maximum ~~amount~~number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising multimedia data~~ in the packet stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.

According to a seventh aspect of the present invention there is provided a signal carrying media data included in data transmission units, the data transmission units ~~having been~~ ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units, wherein ~~it~~ the signal includes a parameter indicative of ~~the~~ a maximum ~~amount~~number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising multimedia data~~ in the packet stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.

According to an eighth aspect of the present invention there is provided a module for receiving an encoded picture stream as data transmission units comprising ~~multi~~media data, the data transmission units ~~having been~~ ordered in a transmission order which is at least partly different from a decoding order of the media data in the data transmission units, wherein a parameter is arranged to be used indicative of ~~the~~ a maximum ~~amount~~number of data transmission units ~~comprising multimedia data~~ that precede any data transmission unit ~~comprising multimedia data~~ in the packet stream in ~~transmission unit~~ transmission order and follow the data transmission unit ~~comprising multimedia data~~ in the decoding order.--

Please amend the specification, beginning at page 15, line 1 as follows:

Let us now consider the encoding-decoding process in more detail. Pictures from the video source 3 are ~~entered to~~ received by the encoder 1 and advantageously stored in the encoding buffer 1.1. The encoding process is not necessarily started immediately after the first picture is ~~entered to~~ received by the encoder, but after a certain amount of pictures are available in the encoding buffer 1.1. Then the encoder 1 tries to find suitable candidates from the pictures to be used as the reference frames. The encoder 1 then performs the encoding to form encoded pictures. The encoded pictures can be, for example, predicted pictures (P), bi-predictive pictures (B), and/or intra-coded pictures (I). The intra-coded pictures can be decoded without using any other pictures, but other type of pictures need at least one reference picture before they can be decoded. Pictures of any of the above mentioned picture types can be used as a reference picture.

Please amend the specification, beginning at page 17, line 9 as follows:

In the following the invention will be described in more detail with reference to the system of Fig. 5, the encoder 1 of Fig. 6 and decoder 2 of Fig. 7. The pictures to be encoded can be, for example, pictures of a video stream on a signal received from a video source 3, *e.g.* a camera, a video recorder, etc. The pictures (frames) of the video stream can be divided into smaller portions such as slices. The slices can further be divided into blocks. In the encoder 1 the video stream is encoded to reduce the information to be transmitted via a transmission channel 4, or to a storage media (not shown). Pictures of the video stream are input to the encoder 1. The encoder has an encoding buffer 1.1 (Fig. 6) for temporarily storing some of the pictures to be encoded. The encoder 1 also includes a memory 1.3 and a processor 1.2 in which the encoding tasks according to the invention can be applied. The memory 1.3 and the

processor 1.2 can be common with the transmitting device 6 or the transmitting device 6 can have another processor and/or memory (not shown) for other functions of the transmitting device 6. The encoder 1 performs motion estimation and/or some other tasks to compress the video stream. In motion estimation similarities between the picture to be encoded (the current picture) and a previous and/or latter picture are searched. If similarities are found the compared picture or part of it can be used as a reference picture for the picture to be encoded. In JVT the display order and the decoding order of the pictures are not necessarily the same, wherein the reference picture has to be stored in a buffer (*e.g.* in the encoding buffer 1.1) as long as it is used as a reference picture. The encoder 1 also inserts information on display order of the pictures into the transmission stream.

Please amend the specification, beginning at page 22, line 15 as follows:

For the sake of simplicity, let us assume that:

- the frame rate of the sequence is constant,
- each picture consists ~~on~~ of only one slice,
- each slice is encapsulated in a single NAL unit packet,
- pictures are transmitted in decoding order, and
- pictures are transmitted at constant intervals (that is equal to 1 / frame rate).

Please amend the specification, beginning at page 25, line 7 as follows:

When the first picture of the video stream is encoded the transmission can be started. The encoded pictures are optionally stored to the encoded picture buffer ~~1.2~~ 1.1. The transmission can also start at a later stage, for example, after a certain part of the video stream is encoded.